# TEST REPORT

| | |
|---|---|
| Applicant Name : | PROMETHEUS GROUP LLC |
| Address : | PO BOX 130100 BIRMINGHAM, ALABAMA 35213-0100 USA |
| Report Number : | SZNS211015-53047E-00B |
| FCC ID: | 2ALGTBTC-4G-V |

**Test Standard (s)**

FCC PART 90

**Sample Description**

| | |
|---|---|
| Product Type: | Hunting Camera |
| Model No.: | BTC-4G-V |
| Trade Mark: | BROWNING |
| Date Received: | 2021-10-15 |
| Date of Test: | 2021-10-28 |
| Report Date: | 2021-11-12 |

| | |
|---|---|
| Test Result: | Pass* |

* In the configuration tested, the EUT complied with the standards above.

**Prepared and Checked By:**

Fan Yang
EMC Engineer

**Approved By:**

Candy Li
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★ ".
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# GENERAL INFORMATION

## Product Description for Equipment under Test (EUT)

| | |
|---|---|
| Product | Hunting Camera |
| Tested Model | BTC-4G-V |
| Radio | LTE Cat M1 |
| Frequency Range | LTE Band 26: 814-824MHz(TX); 859-869MHz(RX) |
| Output Power (Conducted power) | LTE Band 26: 20.49dBm |
| Antenna Specification* | 0.8dBi(provided by the applicant) |
| Modulation Technique | QPSK, 16QAM |
| Voltage Range | DC 12V from battery or adapter |
| Sample serial number | SZNS211015-53047E-RF-S1(Assigned by ATC) |
| Sample/EUT Status | Good |

## Objective

This test report is in accordance with Part 2-Subpart J and Subpart 90 of the Federal Communication Commission's rules.

The objective is to determine compliance with FCC Rules for output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, spurious radiated emission, frequency stability and band edge.

## Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47, Part 2, Part 90.

ANSI C63.26-2015, American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

## Measurement Uncertainty

| Parameter | | Uncertainty |
|---|---|---|
| Occupied Channel Bandwidth | | 5% |
| RF Frequency | | $0.082*10^{-7}$ |
| RF output power, conducted | | 0.73dB |
| Unwanted Emission, conducted | | 1.6dB |
| AC Power Lines Conducted Emissions | | 2.72dB |
| Emissions, Radiated | 9kHz - 30MHz | 2.66dB |
| | 30MHz - 1GHz | 4.28dB |
| | 1GHz - 18GHz | 4.98dB |
| | 18GHz - 26.5GHz | 5.06dB |
| | 26.5GHz - 40GHz | 4.72dB |
| Temperature | | 1℃ |
| Humidity | | 6% |
| Supply voltages | | 0.4% |

*Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

## Test Facility

The Test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297. 01.

Listed by Innovation, Science and Economic Development Canada (ISEDC), the Registration Number is 5077A.

# SYSTEM TEST CONFIGURATION

## Justification

The EUT was configured for testing according to ANSI C63.26-2015.

| Band | Channel Bandwidth | Frequency |
|---|---|---|
| LTE Band 26 | 1.4 MHz | 814.7MHz, 819.0MHz, 823.3MHz |
| | 3 MHz | 815.5MHz, 819.0MHz, 822.5MHz |
| | 5 MHz | 816.5MHz, 819.0MHz, 821.5MHz |
| | 10.0 MHz | 819.0MHz |

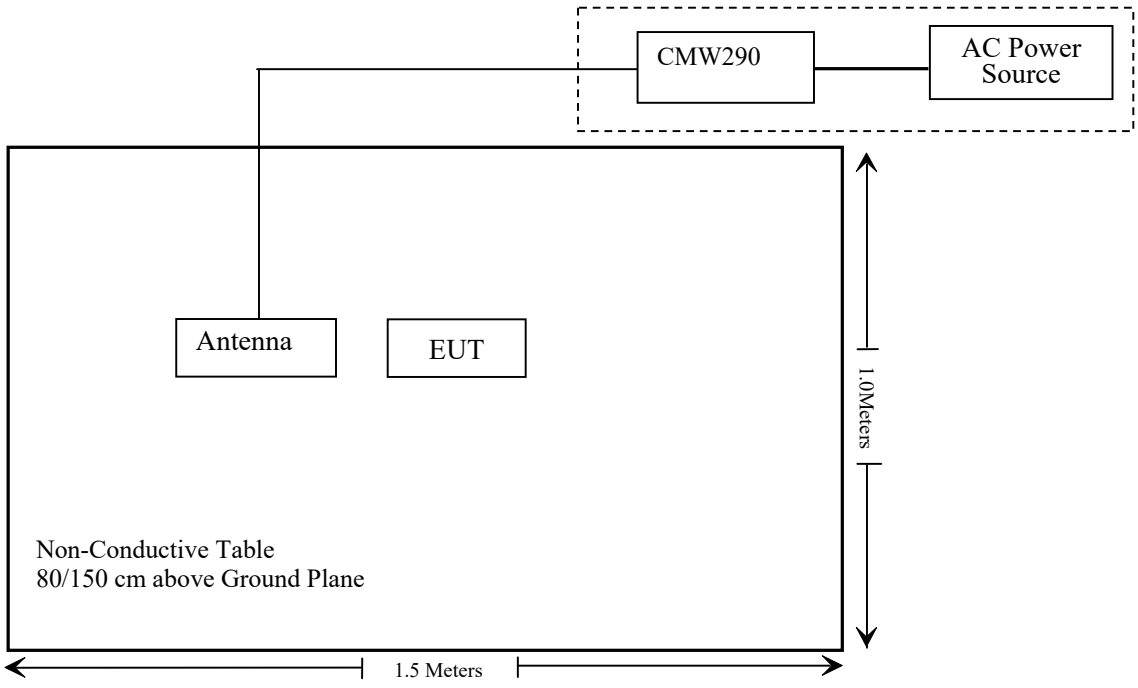
## Equipment Modifications

No modification was made to the EUT.

## Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|---|---|---|---|
| Rohde & Schwarz | Functional Radio Communication Tester | CMW290 | 154606 |
| Un-Known | ANTENNA | Un-Known | Un-Known |

## Block Diagram of Test Setup



# SUMMARY OF TEST RESULTS

| Rules | Description of Test | Result |
|---|---|---|
| FCC §1.1307 (b) (1) & §2.1091 | Maximum Permissible exposure (MPE) | Compliant |
| FCC §2.1047 | Modulation Characteristics | Not Applicable |
| FCC §2.1046; §90.635 | RF Output Power | Compliant* |
| FCC §2.1049 | Occupied Bandwidth | Compliant* |
| FCC §2.1051, §90.691 | Spurious Emissions at Antenna Terminal | Compliant* |
| FCC §2.1053; §90.691 | Field Strength of Spurious Radiation | Compliant |
| FCC §90.691 | Out of band emission, Band Edge | Compliant* |
| FCC§ 2.1055; §90.213 | Frequency stability | Compliant* |

Note 1:
Compliant*: This device contains one same radio unit, which certified with product model of BG95-M1, FCC ID: 2ALGTBG95M1, and the current device had been tested and verified the RF parameters consistently with the original device, please refers to report: R2004A0250-R5V2, issued by TA Technology (Shanghai) Co., Ltd. on 2020-07-13.

Note 2: Maximum ERP

| Mode | Frequency (MHz) | Conducted power (dBm) | Antenna Gain (dBi) | Antenna Gain (dBd) | Cable Loss (dB) | ERP* (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|
| LTE B26 (Part 90) | 814-824 | 20.49 | 0.8 | -1.35 | 0.5 | 18.64 | 50 |

Note*: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable loss(dB)
0dBd=2.15dBi, Cable Loss provided by the applicant

# Test Equipment List

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| **Radiated Emission Test** | | | | | |
| Rohde& Schwarz | Test Receiver | ESR | 101817 | 2020/12/24 | 2021/12/23 |
| Rohde&Schwarz | Spectrum Analyzer | FSV40 | 101495 | 2020/12/24 | 2021/12/23 |
| SONOMA INSTRUMENT | Amplifier | 310 N | 186131 | 2020/12/25 | 2021/12/24 |
| A.H. Systems, inc. | Preamplifier | PAM-0118P | 531 | 2021/07/08 | 2022/07/07 |
| Anritsu Corp | 50 Coaxial Switch | MP59B | 6100237248 | 2020/12/25 | 2021/12/24 |
| Unknown | RF Coaxial Cable | N-5m | No.3 | 2020/12/25 | 2021/12/24 |
| Unknown | RF Coaxial Cable | N-5m | No.4 | 2020/12/25 | 2021/12/24 |
| Unknown | RF Coaxial Cable | N-1m | No.5 | 2020/12/25 | 2021/12/24 |
| Unknown | RF Coaxial Cable | N-1m | No.6 | 2020/12/25 | 2021/12/24 |
| Schwarzbeck | Bilog Antenna | VULB9163 | 9163-194 | 2020/01/05 | 2023/01/04 |
| Schwarzbeck | Bilog Antenna | VULB9163 | 9163-323 | 2020/01/05 | 2023/01/04 |
| Schwarzbeck | Horn Antenna | BBHA9120D | 9120D-655 | 2020/01/05 | 2023/01/04 |
| Schwarzbeck | Horn Antenna | BBHA9120D | 9120D-1067 | 2020/01/05 | 2023/01/04 |
| Unknown | RF Coaxial Cable | N-1m | No.6 | 2020/12/25 | 2021/12/24 |
| Anritsu | Signal Generator | 68369B | 004114 | 2021/7/31 | 2022/7/30 |
| Radiated Emission Test Software: e3 19821b(V9) | | | | | |

* Statement of Traceability: Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

# FCC §1.1307 (b) (1) & §2.1091- Maximum Permissible exposure (MPE)

## Applicable Standard

According to subpart 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

| Limits for General Population/Uncontrolled Exposure | | | | |
|---|---|---|---|---|
| **Frequency Range (MHz)** | **Electric Field Strength (V/m)** | **Magnetic Field Strength (A/m)** | **Power Density ($mW/cm^2$)** | **Averaging Time (Minutes)** |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34-30 | 824/f | 2.19/f | *($180/f^2$) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | / | / | f/1500 | 30 |
| 1500-100,000 | / | / | 1.0 | 30 |

f = frequency in MHz
* = Plane-wave equivalent power density

## Result

**Calculated Formulary:**

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. $mW/cm^2$)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For worst case:

| Mode | Frequency (MHz) | Antenna Gain | | Tune up Conducted power | | Evaluation Distance (cm) | Power Density ($mW/cm^2$) | MPE Limit ($mW/cm^2$) |
|---|---|---|---|---|---|---|---|---|
| | | (dBi) | (numeric) | (dBm) | (mW) | | | |
| LTE B2 | 1850-1910 | 2.8 | 1.91 | 22 | 158.49 | 20 | 0.060 | 1 |
| LTE B4 | 1710-1755 | 2.7 | 1.86 | 22 | 158.49 | 20 | 0.059 | 1 |
| LTE B5 | 824-849 | 0.8 | 1.20 | 22 | 158.49 | 20 | 0.038 | 0.549 |
| LTE B12 | 699-716 | 0.33 | 1.08 | 22 | 158.49 | 20 | 0.034 | 0.466 |
| LTE B13 | 777-787 | 0.33 | 1.08 | 22 | 158.49 | 20 | 0.034 | 0.518 |
| LTE B25 | 1850-1915 | 2.8 | 1.91 | 22 | 158.49 | 20 | 0.060 | 1 |
| LTE B26 (Part 90) | 814-824 | 0.8 | 1.20 | 22 | 158.49 | 20 | 0.038 | 0.543 |
| LTE B26 (Part 22) | 824-849 | 0.8 | 1.20 | 22 | 158.49 | 20 | 0.038 | 0.549 |
| LTE B66 | 1710-1780 | 2.7 | 1.86 | 22 | 158.49 | 20 | 0.059 | 1 |
| LTE B85 | 698-716 | 0.33 | 1.08 | 22 | 158.49 | 20 | 0.034 | 0.465 |

Note 1: The tune up conducted power was declared by the applicant.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

**Result: Compliant.**

# FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 90 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

# FCC §2.1053, §90.691 – FIELD STRENGTH SPURIOUS RADIATED

## Applicable Standard

FCC § 2.1053, §90.691;

## Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 $Log_{10}$ (power out in Watts)

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 20 °C |
| **Relative Humidity:** | 46 % |
| **ATM Pressure:** | 100.0 kPa |

*The testing was performed by Fan Yang on 2021-10-28*

*EUT Operation Mode: Transmitting*

*Test Result: Compliant.*

*Pre-scan with all the bandwidth for X axis, Y axis, Z axis, and worst case for Z axis as below:*

*30MHz – 10GHz:*

| Frequency(MHz) | Receiver Reading (dBm) | Turntable Degree | Rx Antenna | | Substituted Factor (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| | | | Height (m) | Polar (H/V) | | | | |
| 4G BAND26, 30MHz – 10GHz, 1.4MHz Bandwidth, Low Channel | | | | | | | | |
| 972.34 | -63.76 | 147 | 2.3 | H | 12.69 | -51.07 | -13 | 38.07 |
| 49.97 | -58.50 | 158 | 2.4 | V | 2.65 | -55.85 | -13 | 42.85 |
| 1629.4 | -49.24 | 52 | 2 | H | -2.76 | -52.00 | -13 | 39.00 |
| 1629.4 | -55.33 | 286 | 2.4 | V | -2.83 | -58.16 | -13 | 45.16 |
| 4G BAND26, 30MHz – 10GHz, 1.4MHz Bandwidth, Middle Channel | | | | | | | | |
| 972.34 | -64.46 | 99 | 2.2 | H | 12.69 | -51.77 | -13 | 38.77 |
| 49.97 | -59.10 | 225 | 1.1 | V | 2.65 | -56.45 | -13 | 43.45 |
| 1638 | -49.60 | 214 | 1.8 | H | -2.75 | -52.35 | -13 | 39.35 |
| 1638 | -56.17 | 317 | 2.1 | V | -2.81 | -58.98 | -13 | 45.98 |
| 4G BAND26, 30MHz – 10GHz, 1.4MHz Bandwidth, High Channel | | | | | | | | |
| 972.34 | -62.22 | 94 | 1.5 | H | 10.53 | -51.69 | -13 | 38.69 |
| 49.97 | -53.37 | 145 | 1.4 | V | -3.2 | -56.57 | -13 | 43.57 |
| 1646.6 | -49.53 | 67 | 1.1 | H | -2.73 | -52.26 | -13 | 39.26 |
| 1646.6 | -55.89 | 169 | 1.1 | V | -2.8 | -58.69 | -13 | 45.69 |

**Note:**
Absolute Level = Receiver Reading + Substituted Factor
Substituted Factor contains: SG Level - Cable loss+ Antenna Gain
Margin = Limit - Absolute Level

******* END OF REPORT *******